

FIGURES

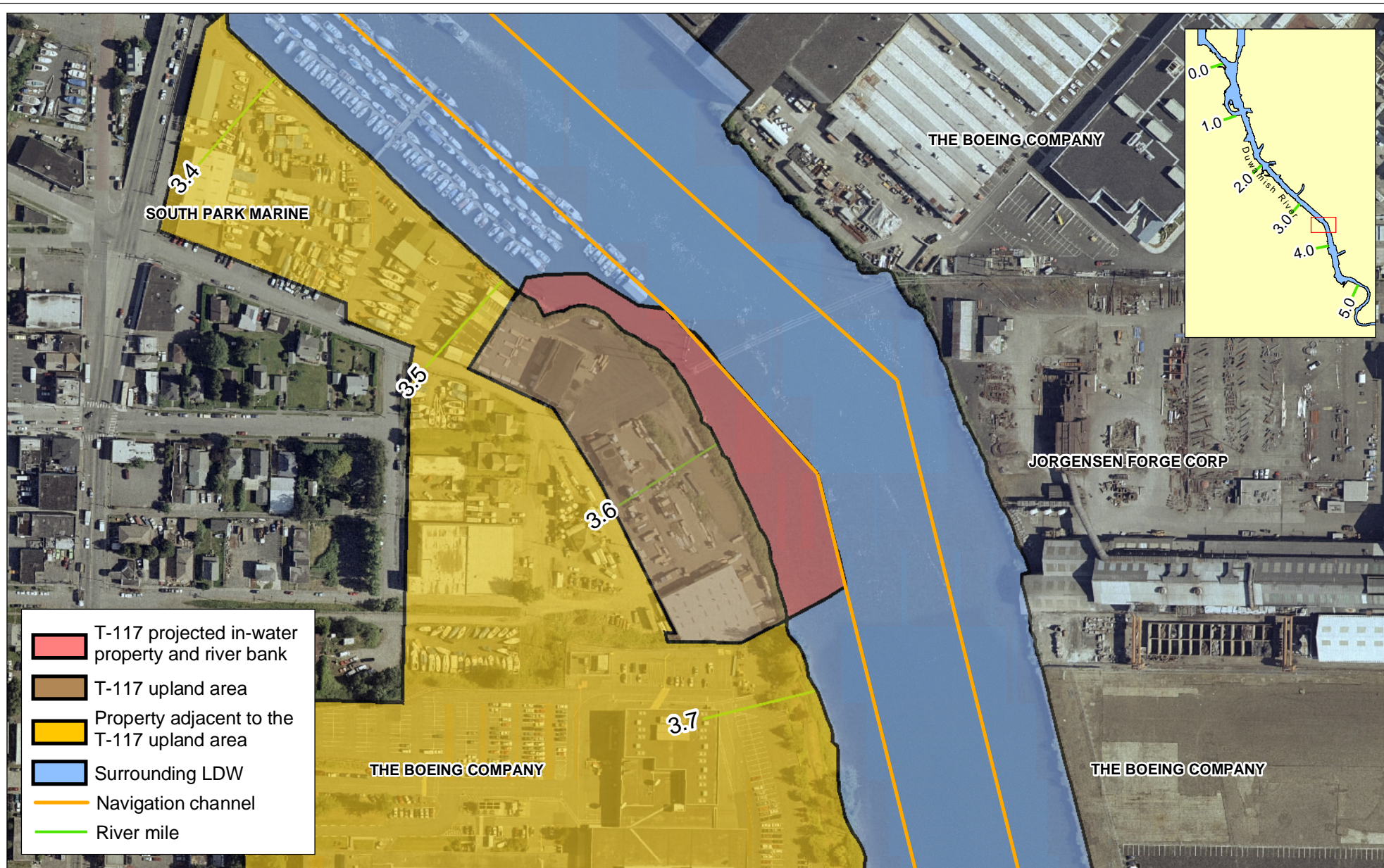


Figure 1-1. Terminal 117 site location map

Orthophoto source: King County 1999.

Early Action remediation boundary to be determined based on the results of this investigation



WindWard
environmental LLC

Prepared by RAC 08/27/03 Map 966

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS

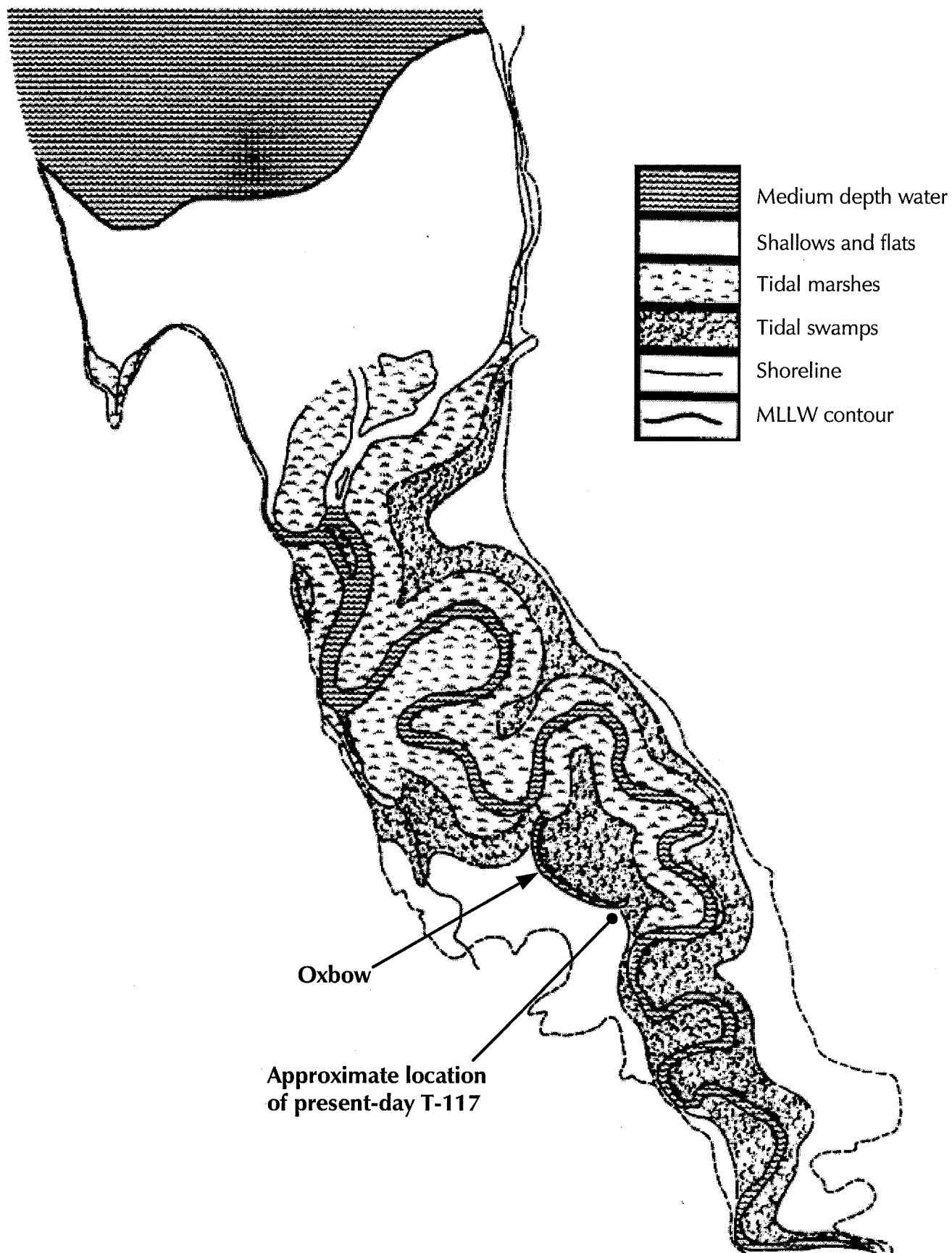


Figure 2-1. Duwamish River estuary in 1854
(adapted from Blomberg et al. 1998)

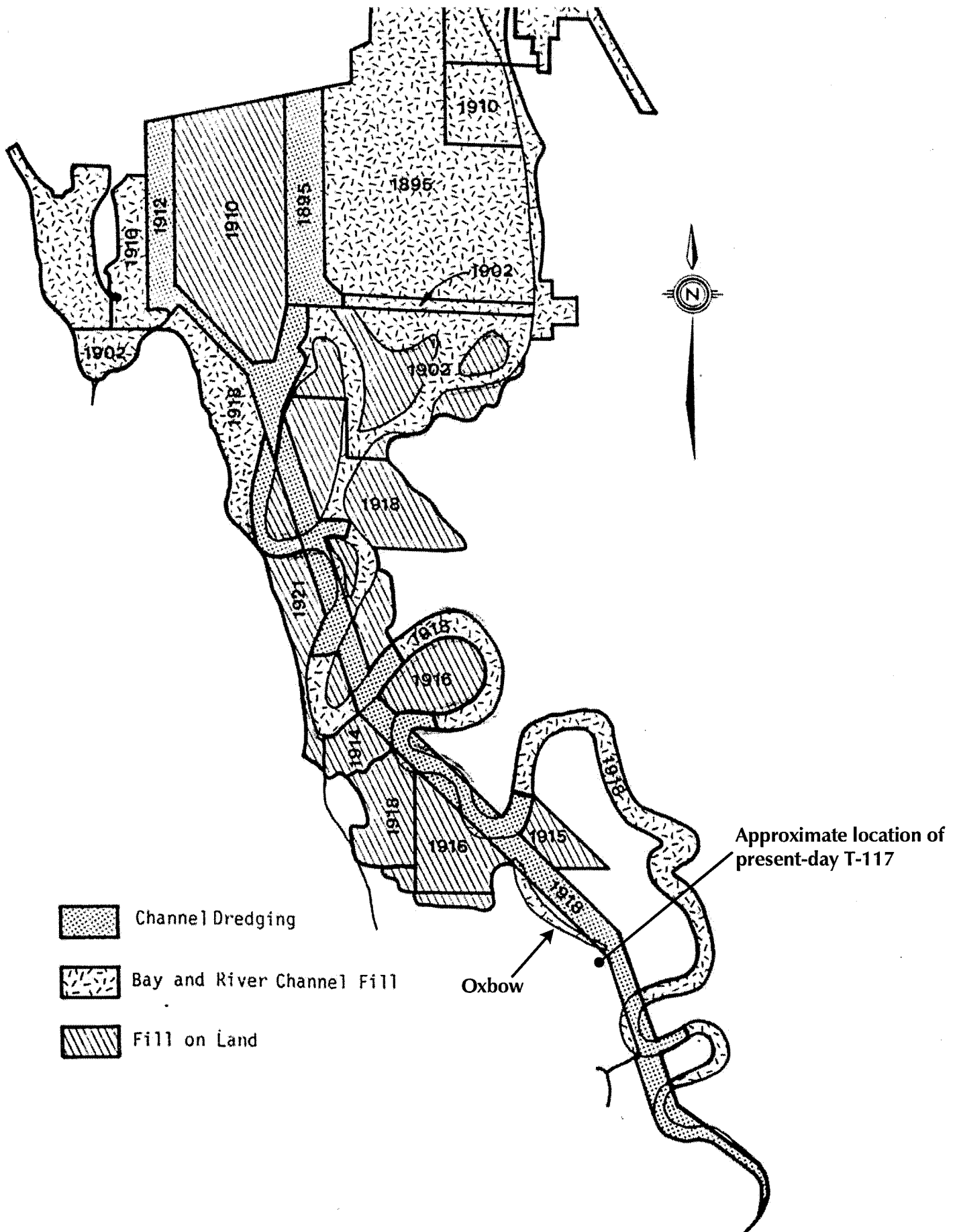


Figure 2-2. Dredge and fill history (Harper-Owes 1971)

T-117 Summary of Existing Information

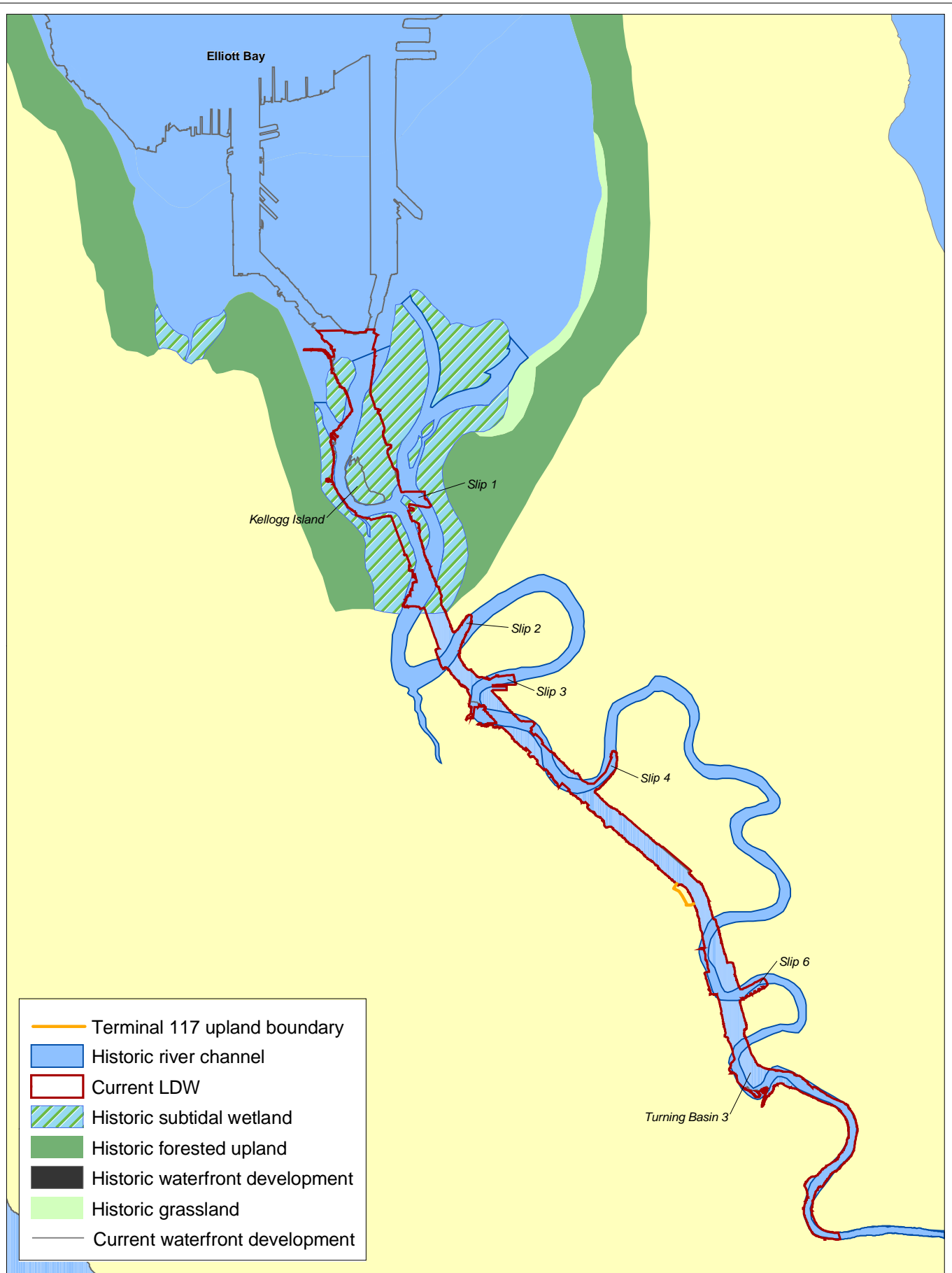
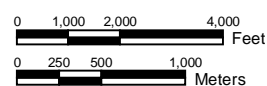


Figure 2-3. Historical and current delineations of the LDW channel, estuary habitat, and waterfront development

Source: Booth and Herman, 1998 with downtown Seattle waterfront updates by Windward, 2003.

Early Action remediation boundary to be determined based on the results of this investigation



Windward
environmental LLC

Prepared by RAC 08/27/03 Map 976

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS



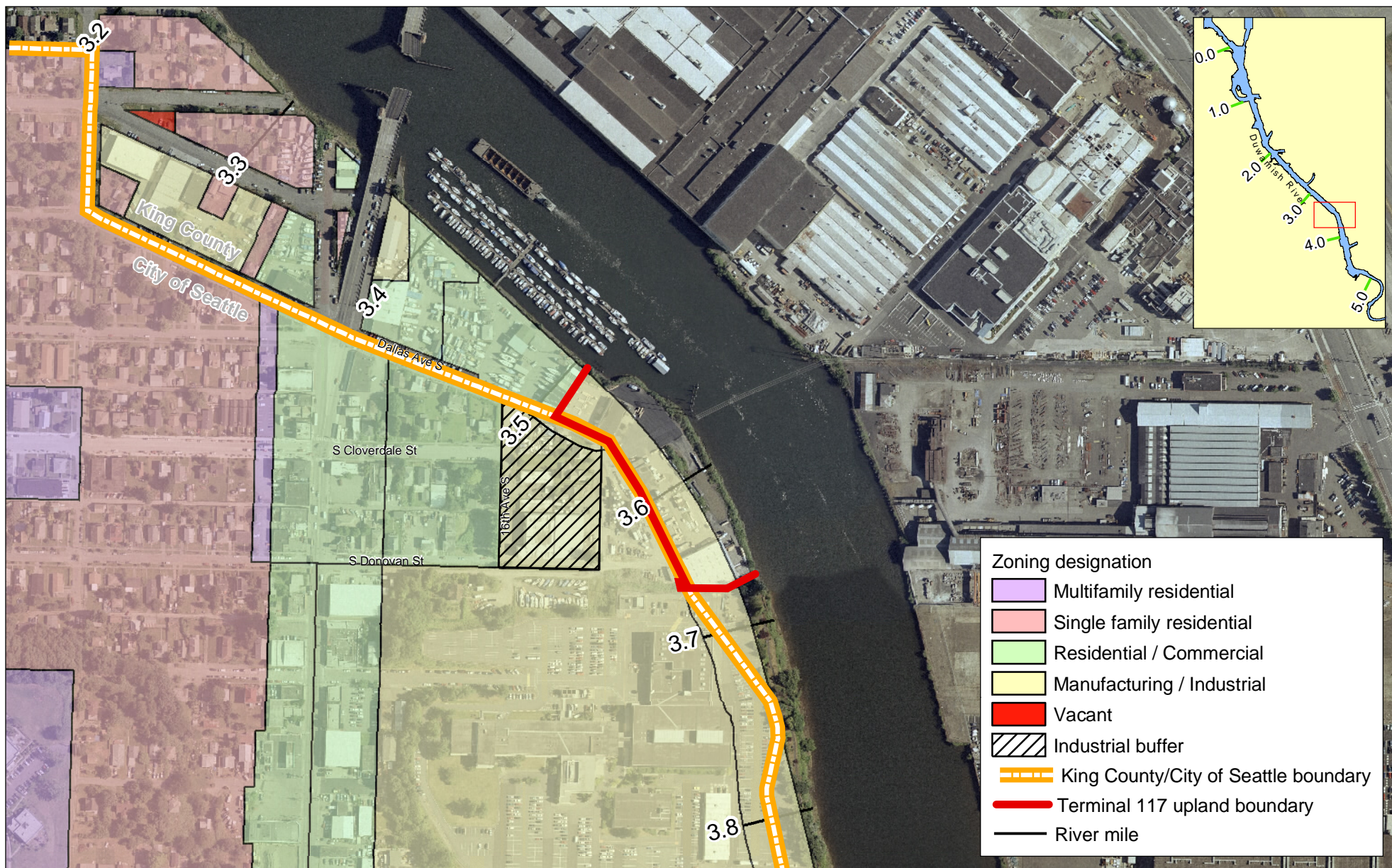
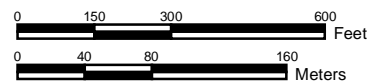


Figure 2-5. Land use designations in the Terminal 117 vicinity

Orthophoto source: King County 1999.

Early Action remediation boundary to be determined based on the results of this investigation



WindWard
environmental LLC

Prepared by RAC 08/27/03 Map 977

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS

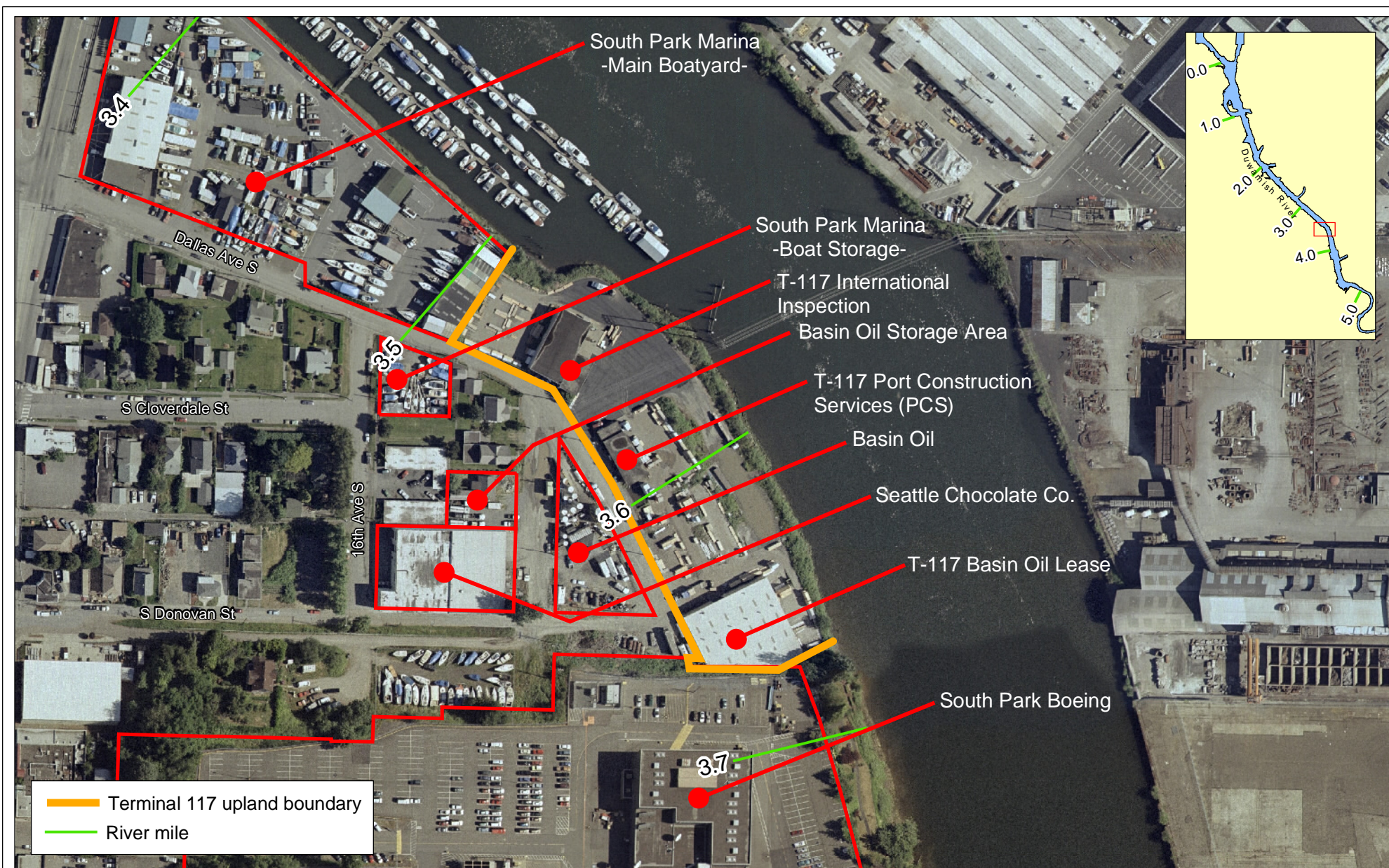


Figure 2-6. Current industrial activities in the Terminal 117 study area

Orthophoto source: King County 1999.

Early Action remediation boundary to be determined based on the results of this investigation

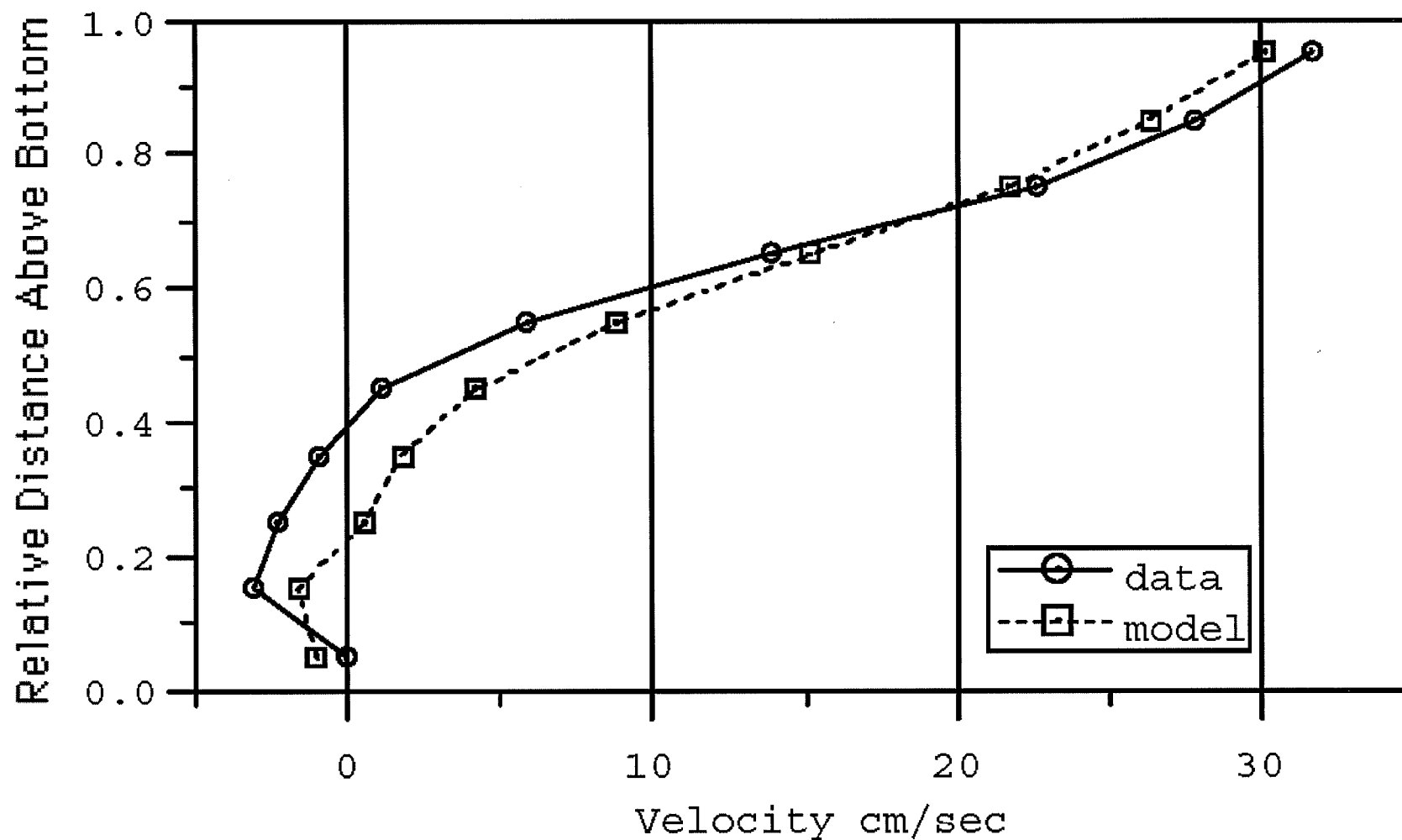


Figure 3-1. Mean along-channel velocity at LDW RM 3.5 (King County 1999a)¹

T-117 Summary of Existing Information



¹ Taken from Figure D-10, "Mean Longitudinal Velocity at Station BOE," in Appendix B1, Subappendix D.



Figure 3-2. Terminal 117 intertidal habitat

Photos taken June 16, 2003 at lower-low tide (-3.0 ft MLLW)
Orthophoto source: King County 1999.

Early Action remediation boundary to be determined based on the results of this investigation

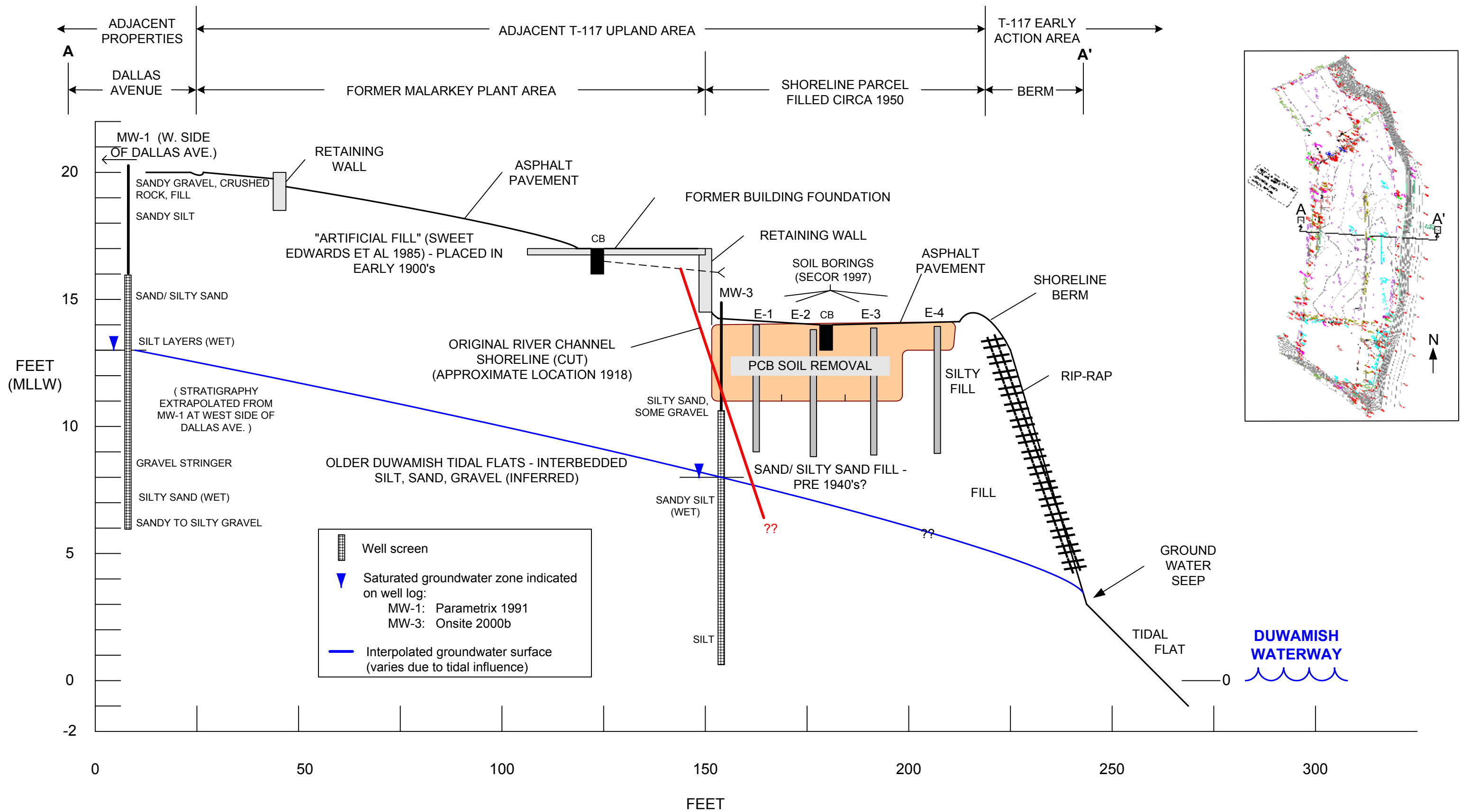


Figure 3-3. Terminal 117 cross section

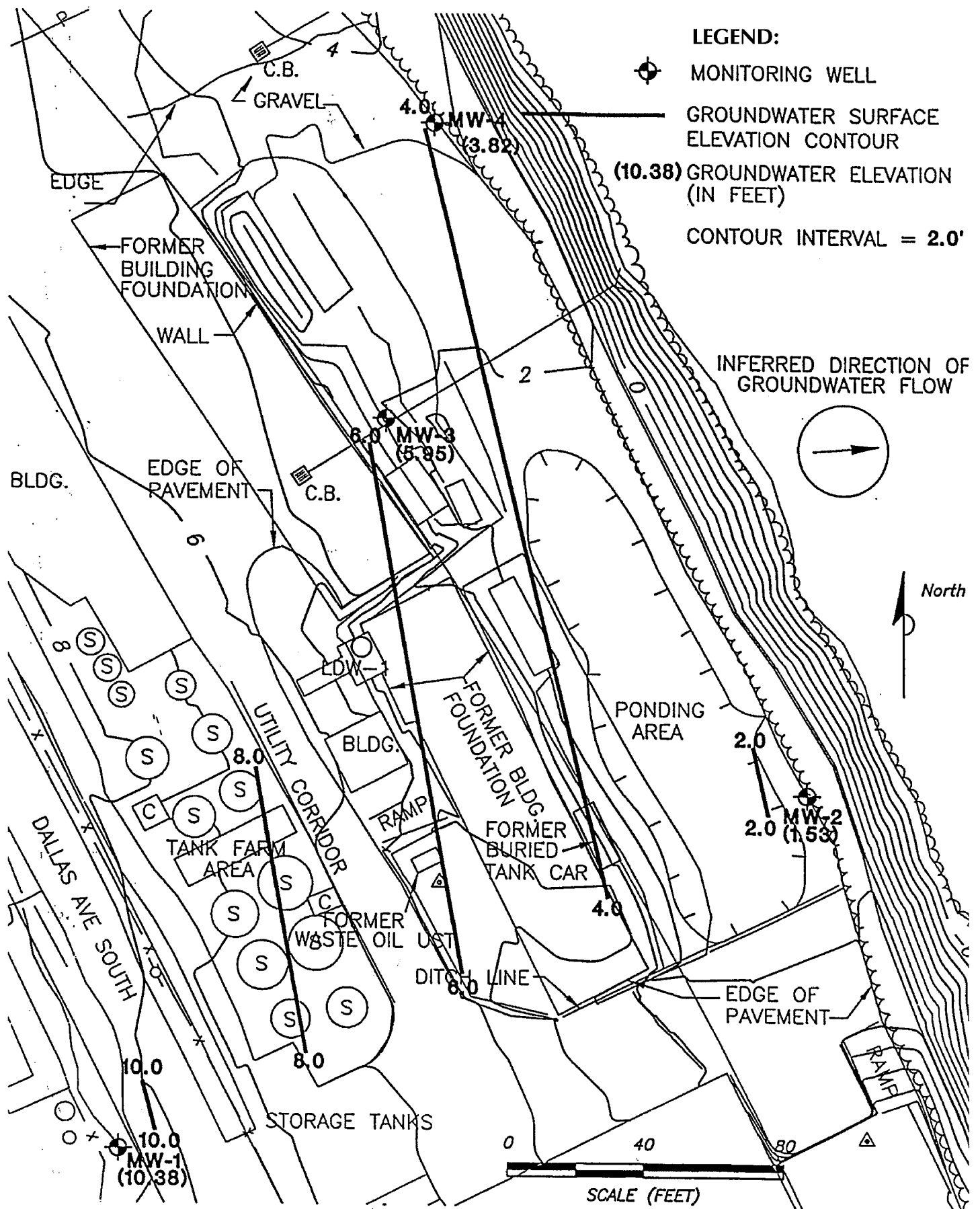


Figure 3-4. Historical groundwater elevation contour map* (SECOR 1998)

*Datum based on City of Seattle; sampling date April 29, 1998

T-117 Summary of Existing Information

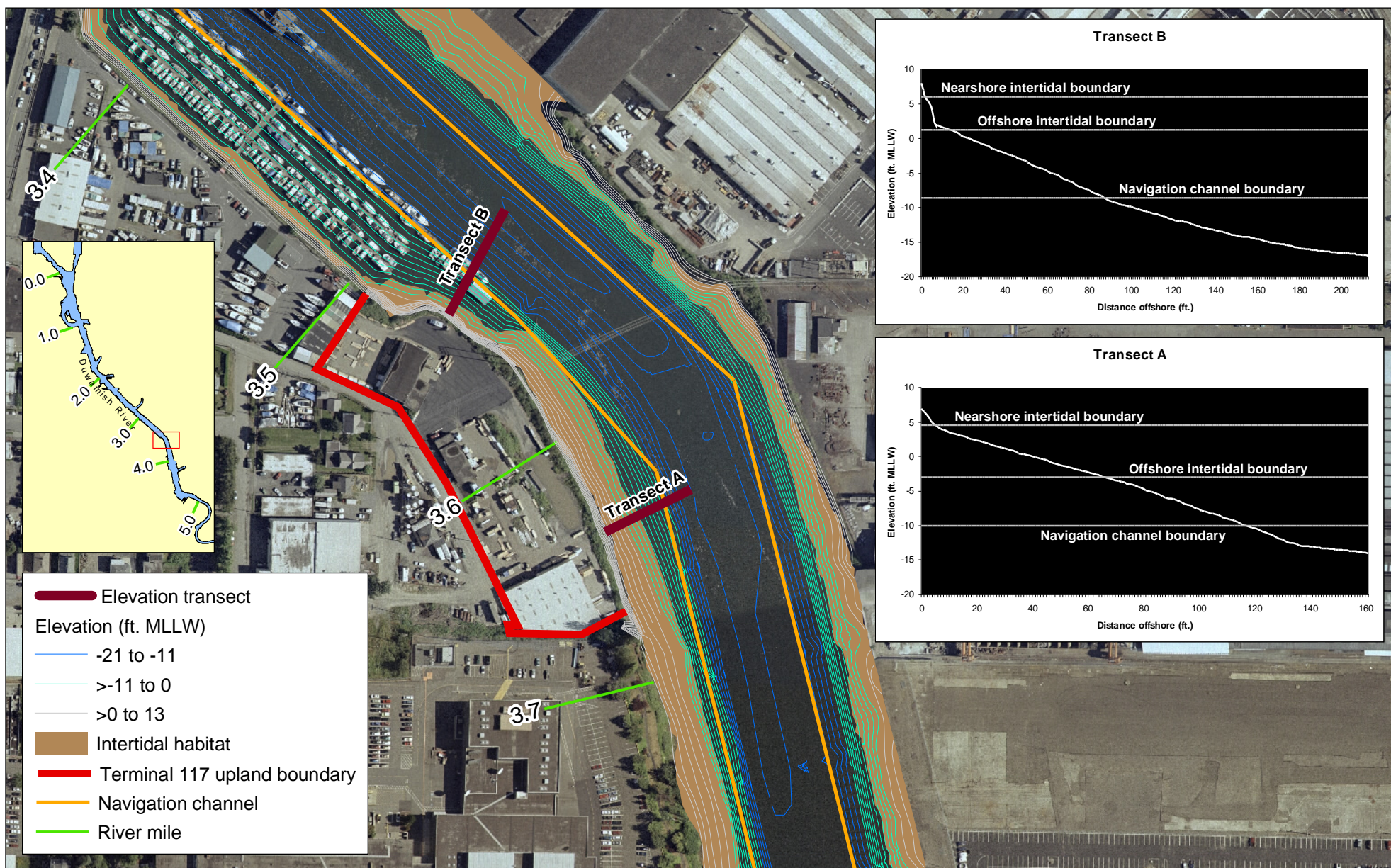


Figure 3-5. Approximate elevation at select transects within the Terminal 117 study area

Bathymetry information compiled from the U.S. Army Corps of Engineers March 2003 hydro survey.
 Orthophoto source: King County 1999.

Early Action remediation boundary to be determined based on the results of this investigation



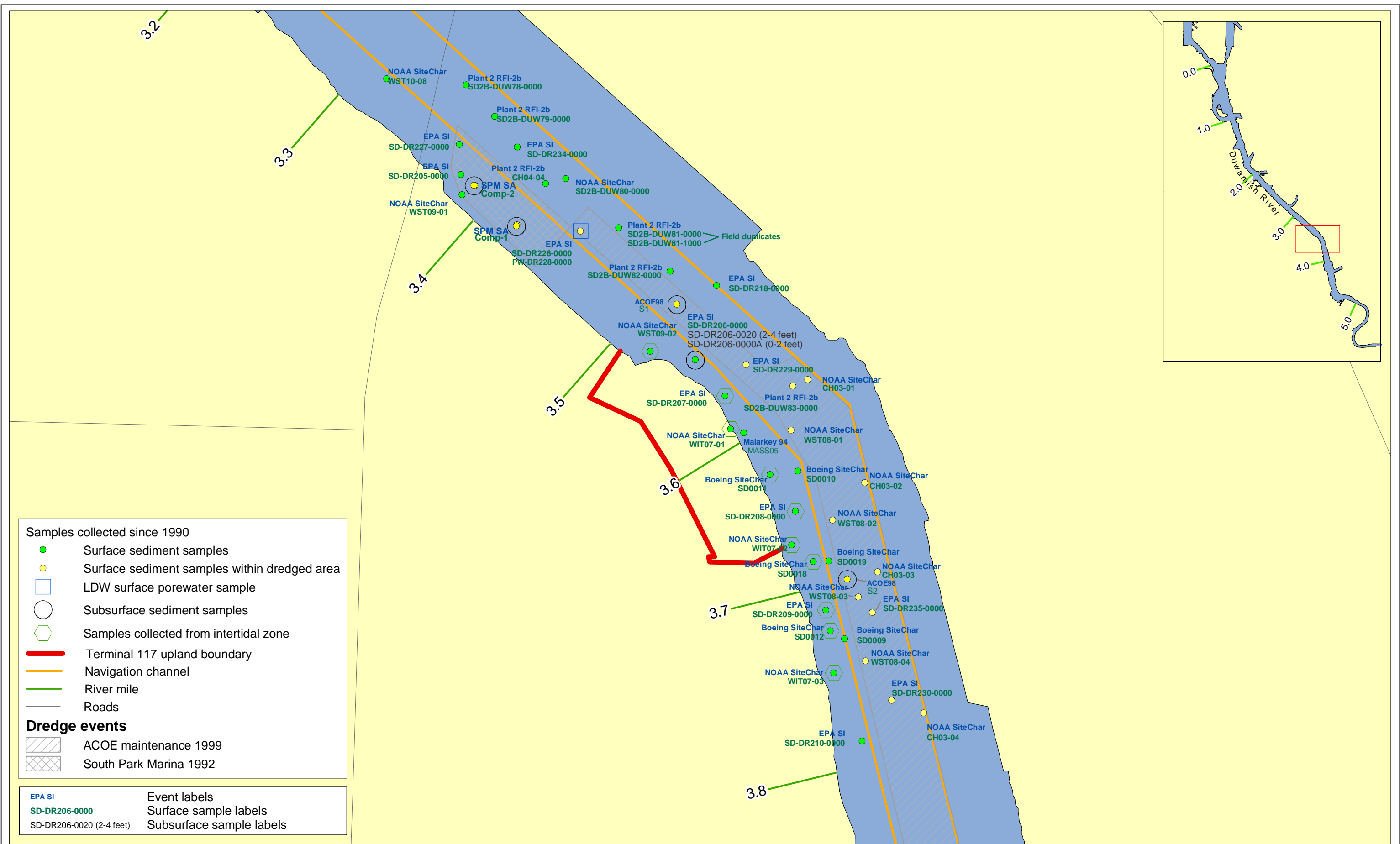
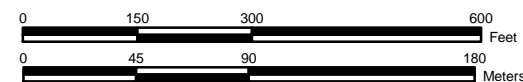


Figure 4-1. Existing samples in the vicinity of Terminal 117: sample IDs and sampling event names

A summary of previous investigations is listed in Table 4-1. Location numbers for samples are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation



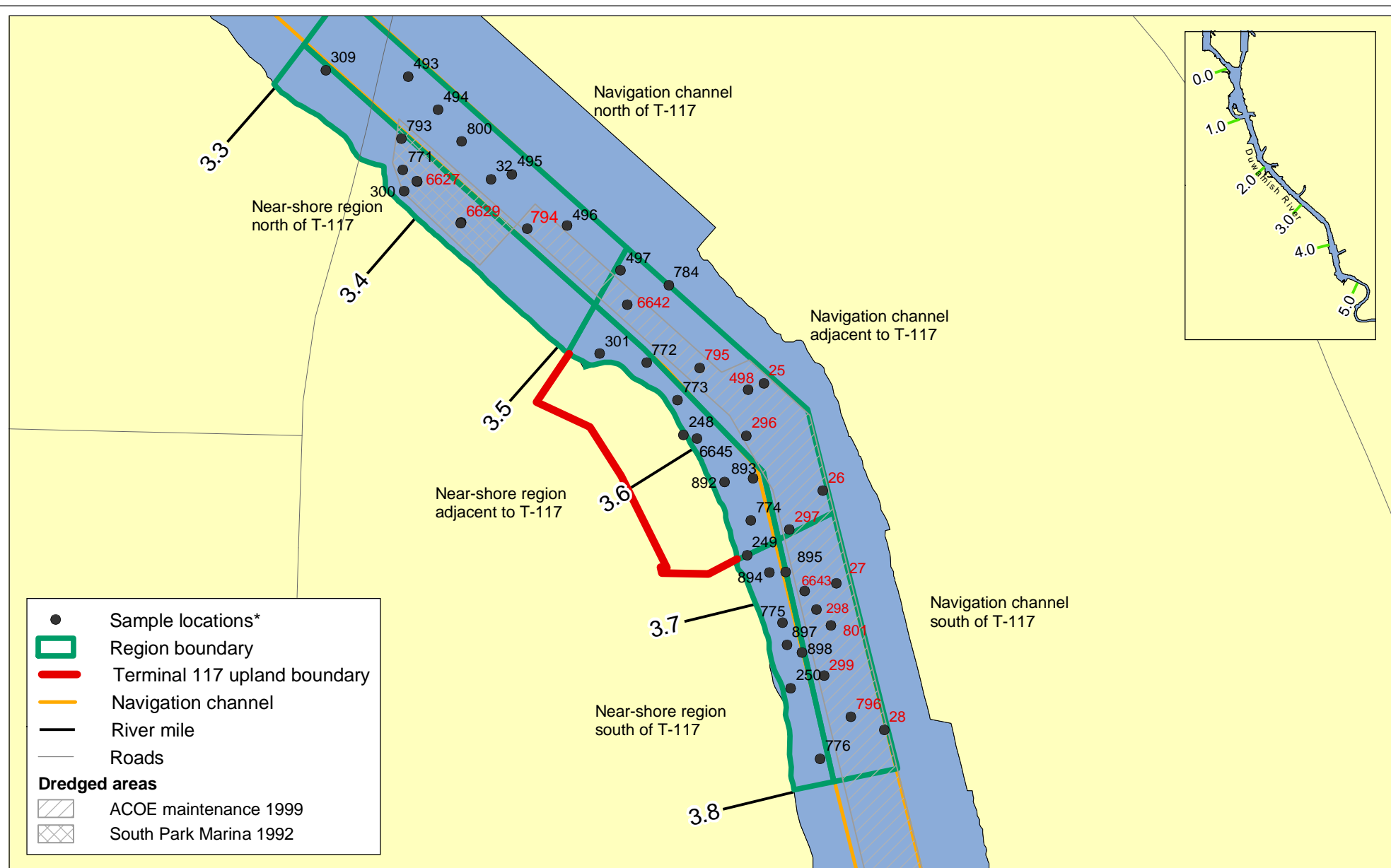


Figure 4-2. Existing sample station locations in the vicinity of Terminal 117

*Location numbers in red represent dredged samples

Location numbers referenced in Table 4-3

Early Action remediation boundary to be determined based on the results of this investigation

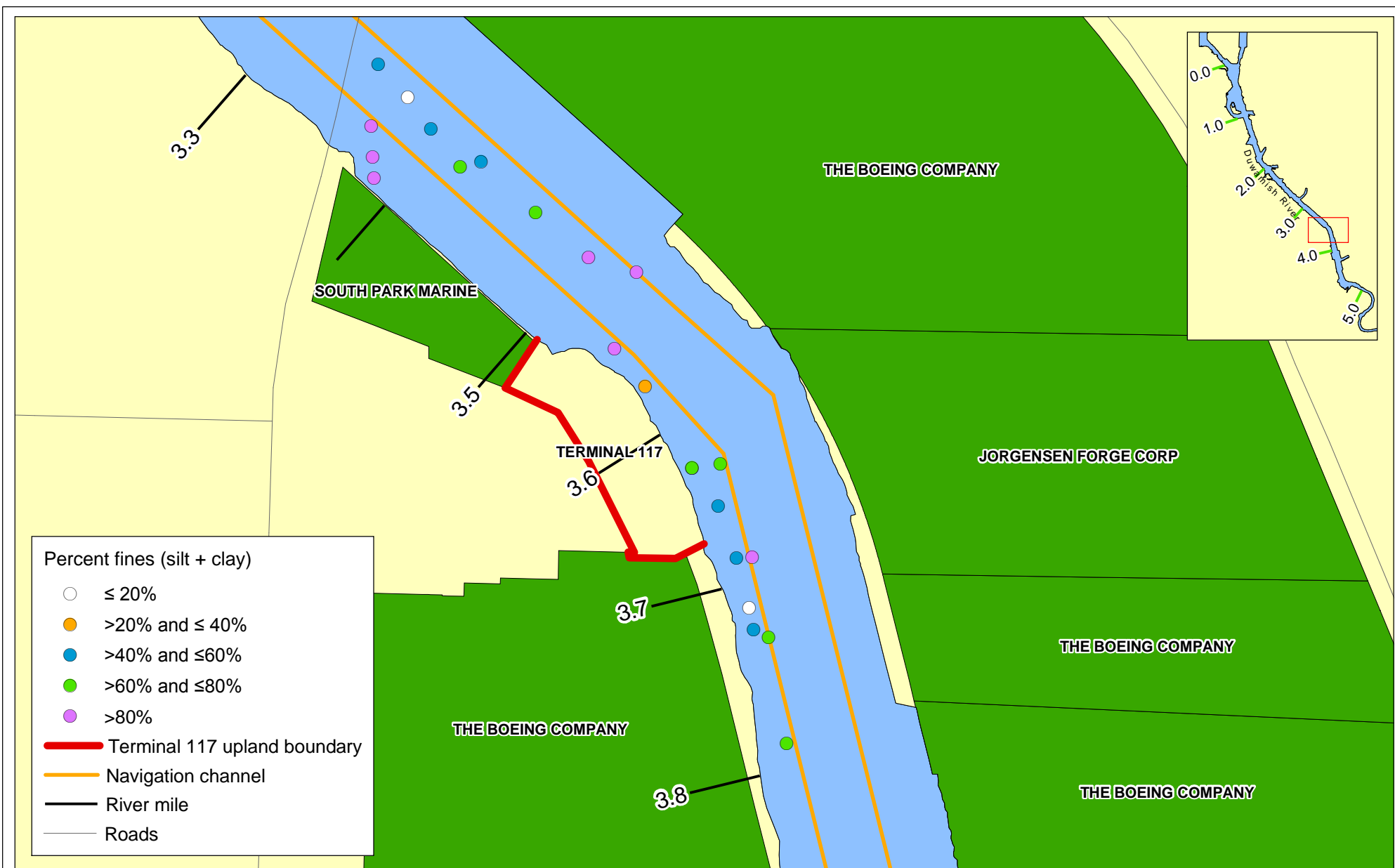


Figure 4-3. Percent fines in surface (0-15 cm) sediment

Samples associated with each location number are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation

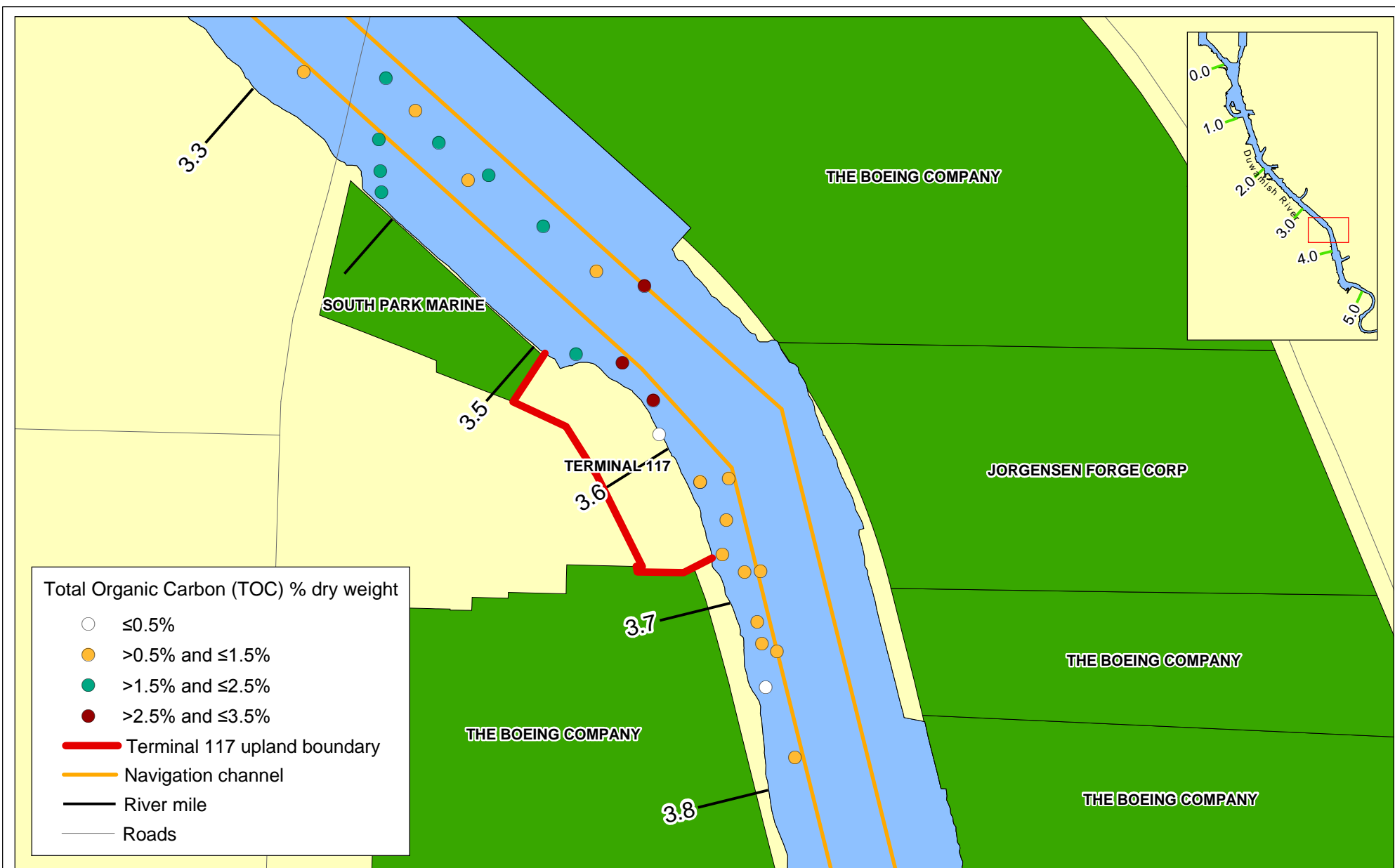
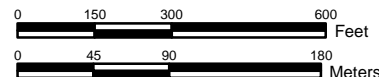


Figure 4-4. Total organic carbon in surface (0-15 cm) sediment

Samples associated with each location number are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation



Windward
environmental LLC

Prepared by CEJ 08/27/03 Map 1004

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS

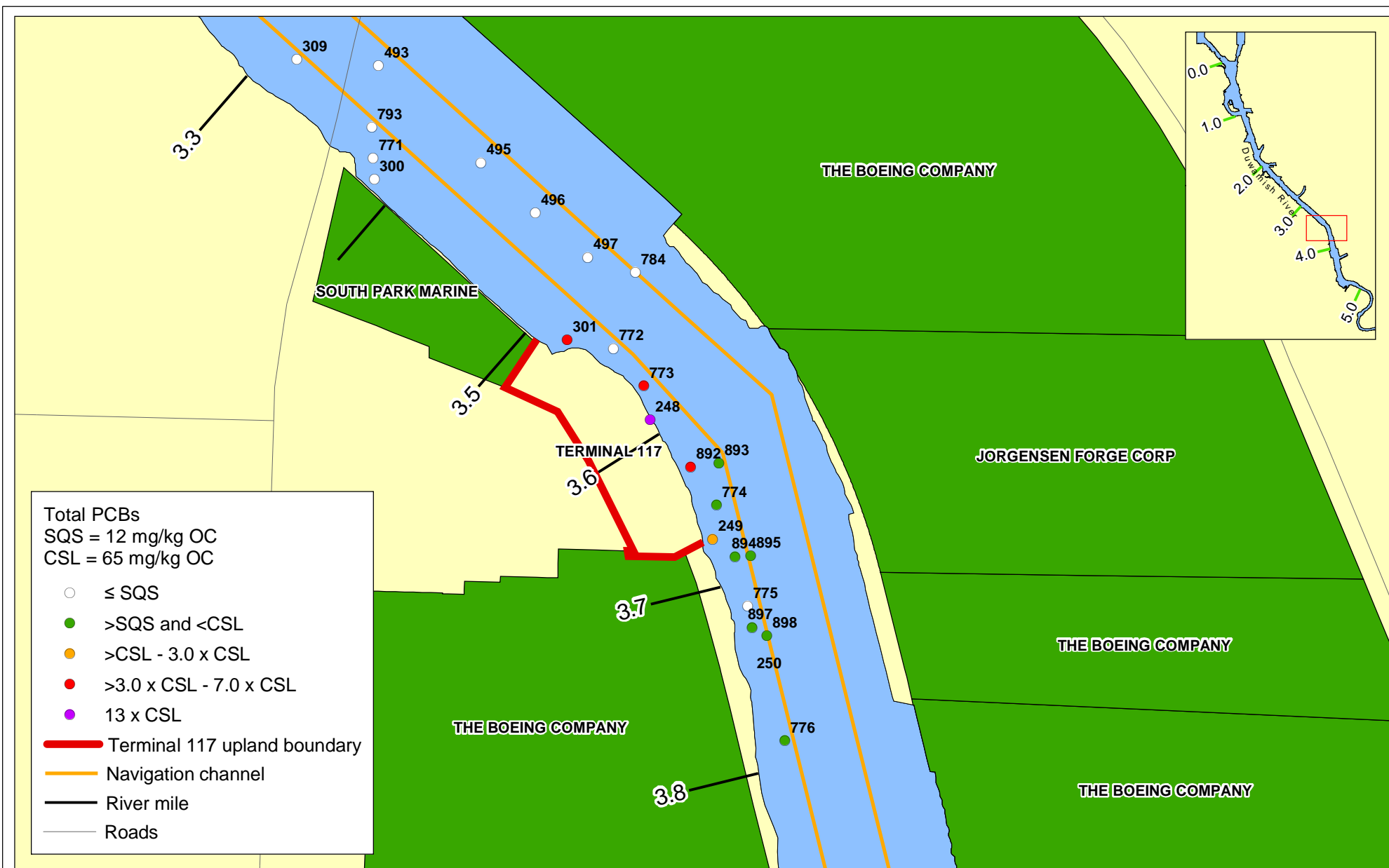
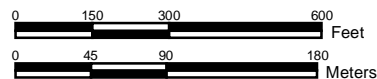


Figure 4-5. Total PCB exceedances of SMS standards in surface (0-15 cm) sediment

Total PCB were summarized in accordance with SMS guidelines, Chapter 173-204 WAC.

Samples associated with each location number are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation



WindWard
 environmental LLC

Prepared by RAC 08/27/03 Map 967

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS

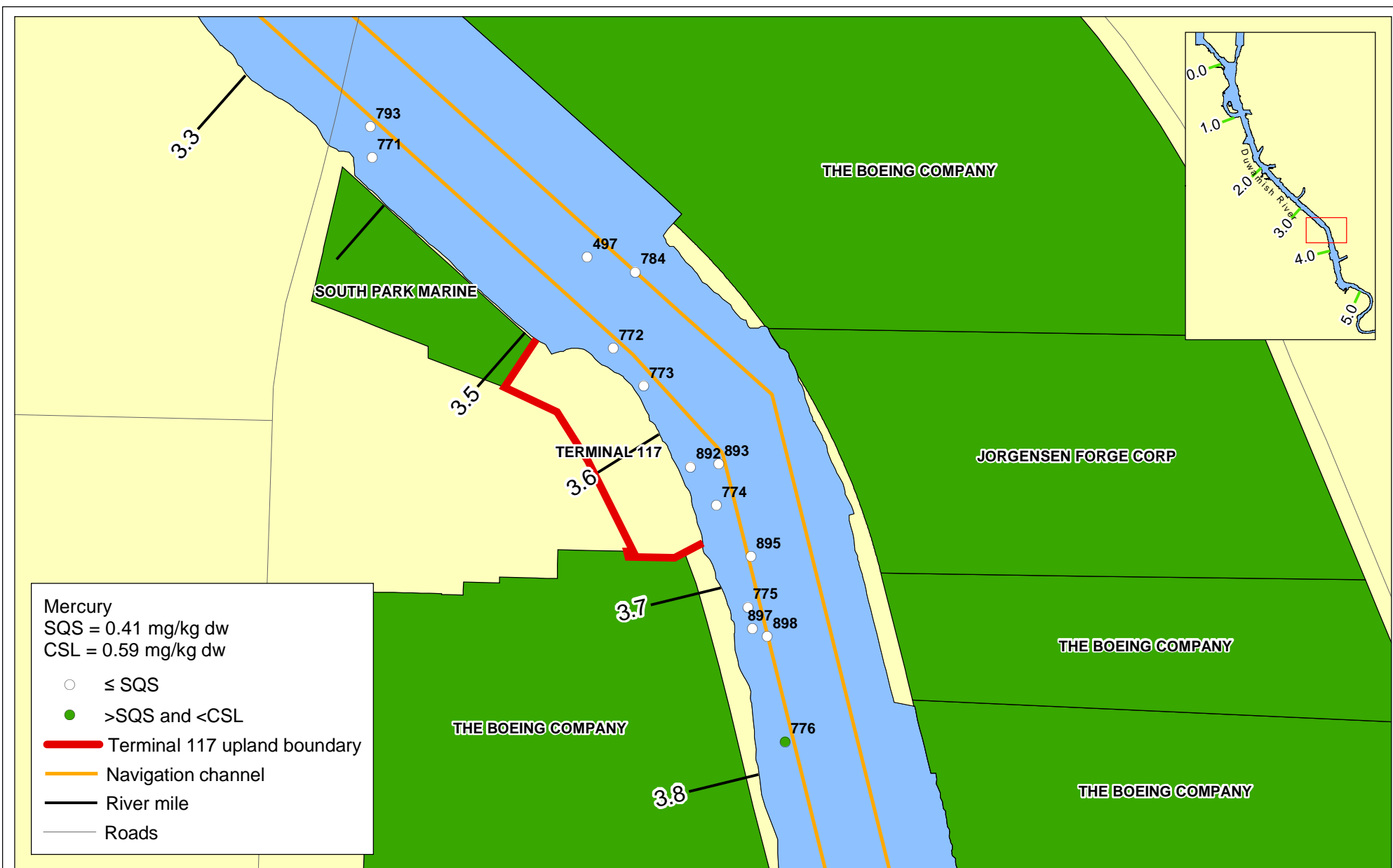
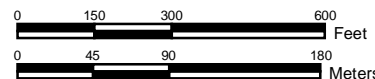


Figure 4-6. Mercury exceedances of SMS standards in surface (0-15 cm) sediment

There are no SMS exceedances for mercury greater than the CSL

Samples associated with each location number are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation



Windward
 environmental LLC

Prepared by RAC 08/27/03 Map 968

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS

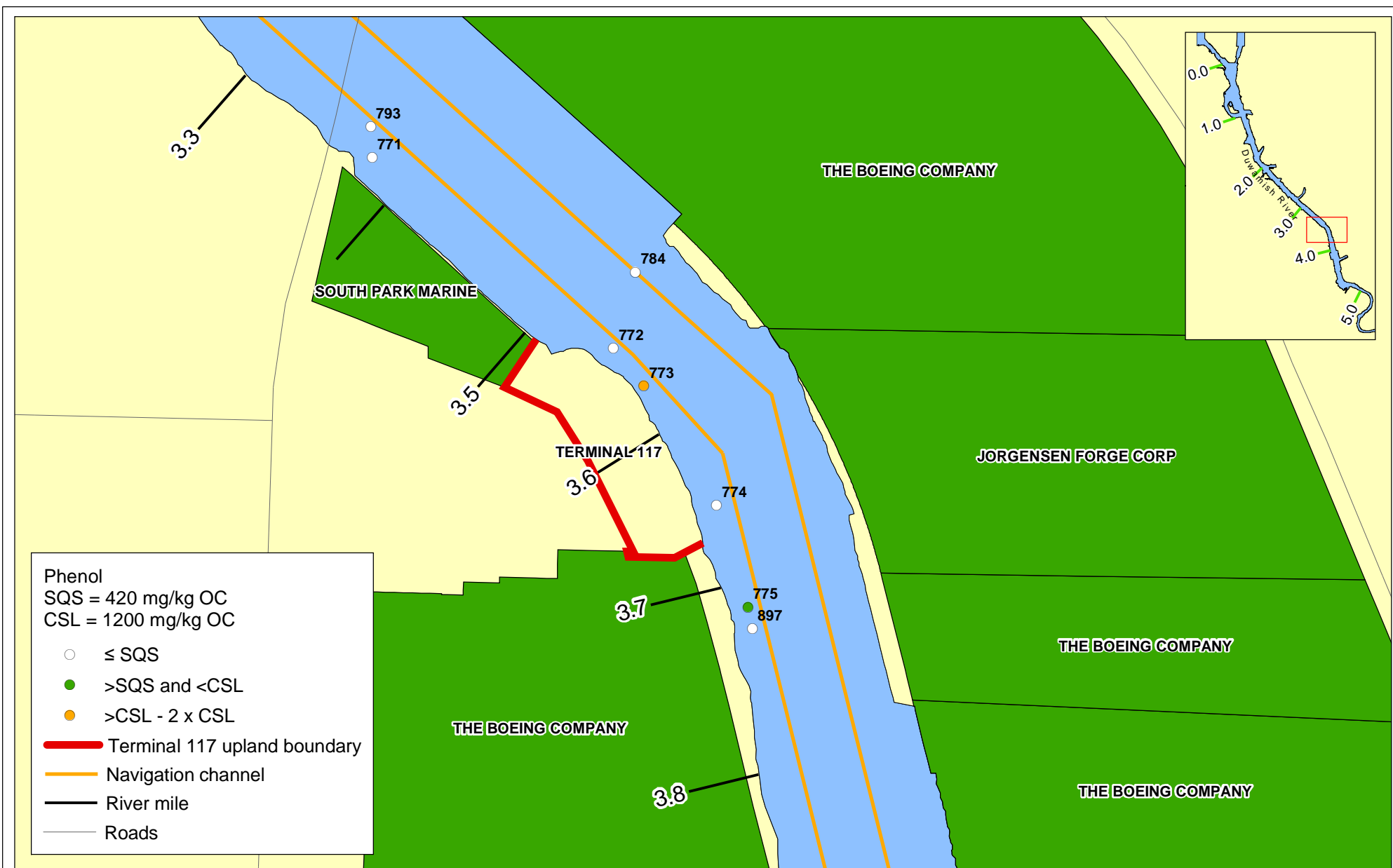
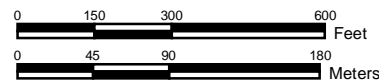


Figure 4-7. Phenol exceedances of SMS standards in surface (0-15 cm) sediment

Samples associated with each location number are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation



Windward
 environmental LLC

Prepared by RAC 08/27/03 Map 971

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS

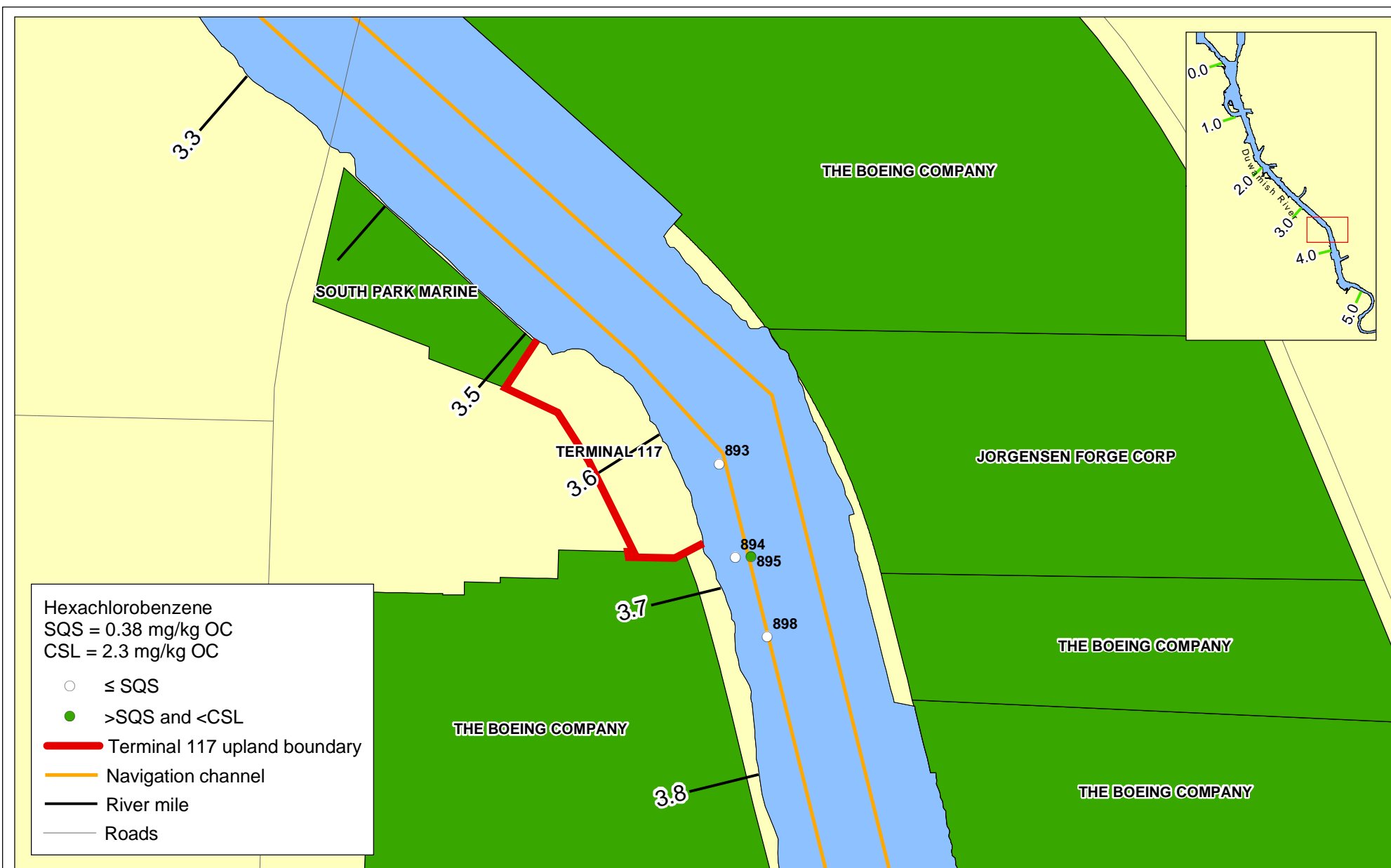
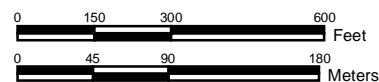


Figure 4-8. Hexachlorobenzene exceedances of SMS standards in surface (0-15 cm) sediment

There are no SMS exceedances for hexachlorobenzene greater than the CSL

Samples associated with each location number are listed in Table 4-3.

Early Action remediation boundary to be determined based on the results of this investigation





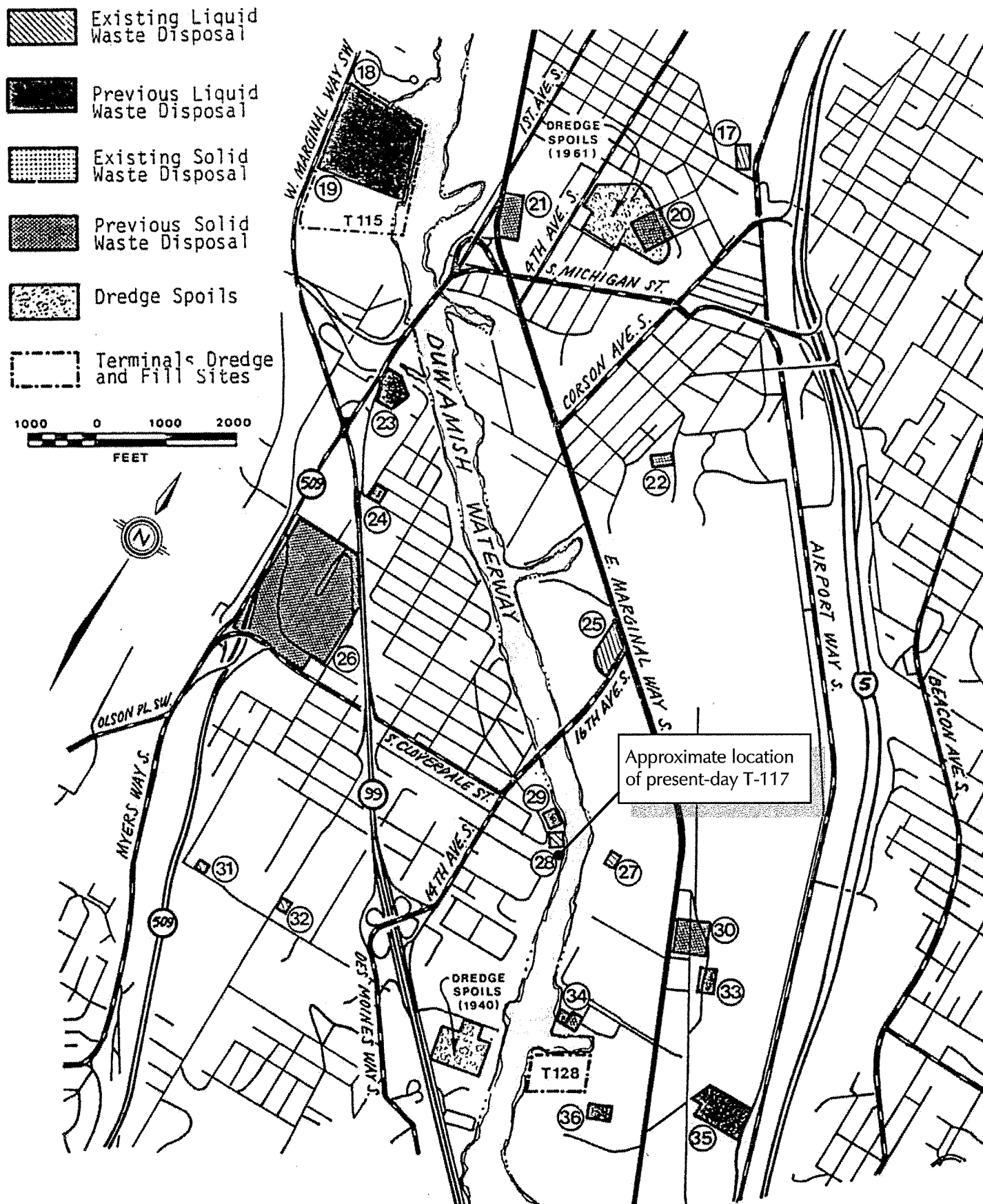


Figure 5-1. Waste disposal and dredge fill sites (Sweet Edwards 1985)

T-117 Summary of Existing Information



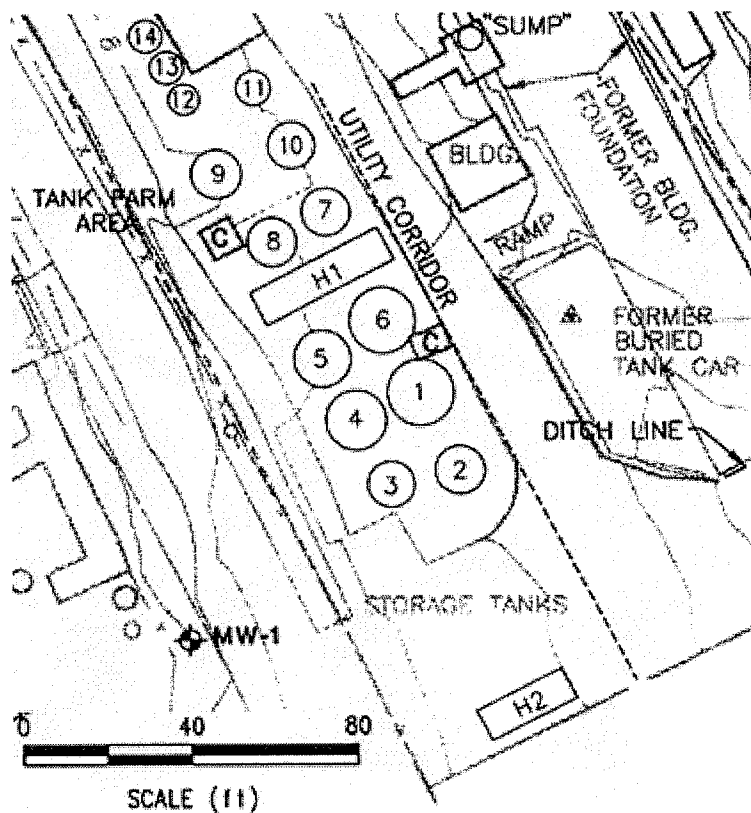


TANK #	APPROXIMATE DIMENSIONS (ft ^a)	CONTENTS	APPROXIMATE QUANTITY (gal)	APPROXIMATE TOTAL CAPACITY (gal)
1	16 x 18	empty	0	27,000
2	11.5 x 34	oil	nd	25,000
3	11.5 x 34	oil	nd	26,000
4	13 x 22	oil	nd	22,000
5	13 x 22	asphalt	19,860	22,000
6	16 x 18	asphalt	6,020	27,000
H1	9 x 33	nd	4,580	16,000
7	12 x 20	asphalt	850	17,000
8	12 x 20	empty	0	17,000
9	12 x 30	water	--	25,000
10	12 x 30	asphalt	5,080	25,000
11	nd	oil	nd	nd
12	8 x 48	empty	0	18,000
13	8 x 48	asphalt	2,260	11,000
14	8 x 30	asphalt	2,260	18,000
H2	8 x 48	nd	nd	nd

^a Diameter X height

^b Five ft of product

nd – not determined



Tank farm area in 1980 aerial photo

Figure 5-4. Tank inventory of Malarkey Asphalt Plant prior to dismantling (EMCOM 1996)



Figure 5-5. Catch basins and boat wash area associated with South Park Marina

Orthophoto source: King County 1999.

DESIGNATION	GALLONS	DIAMETER	CONTENTS
CD-1	4,000	6.37 ft	cool down tank
CD-2	4,000	6.37 ft	cool down tank
R	2,500	6.37 ft	RAG
C-1	4,000	6.37 ft	heating tank
C-2	4,000	6.37 ft	heating tank
T-1	10,000	8.06 ft	non-potable water
T-2	10,000	8.06 ft	used oil
T-3	10,000	8.06 ft	processed oil
T-4	10,000	8.06 ft	used oil
T-5	10,000	8.06 ft	non-potable water
F-1	4,000	6.37 ft	water-soluble coolant
F-2	1,500	5.00 ft	plant fuel
BT-1	20,000	7.7 x 35 ft	used oil
BT-2	20,000	7.7 x 35 ft	used oil

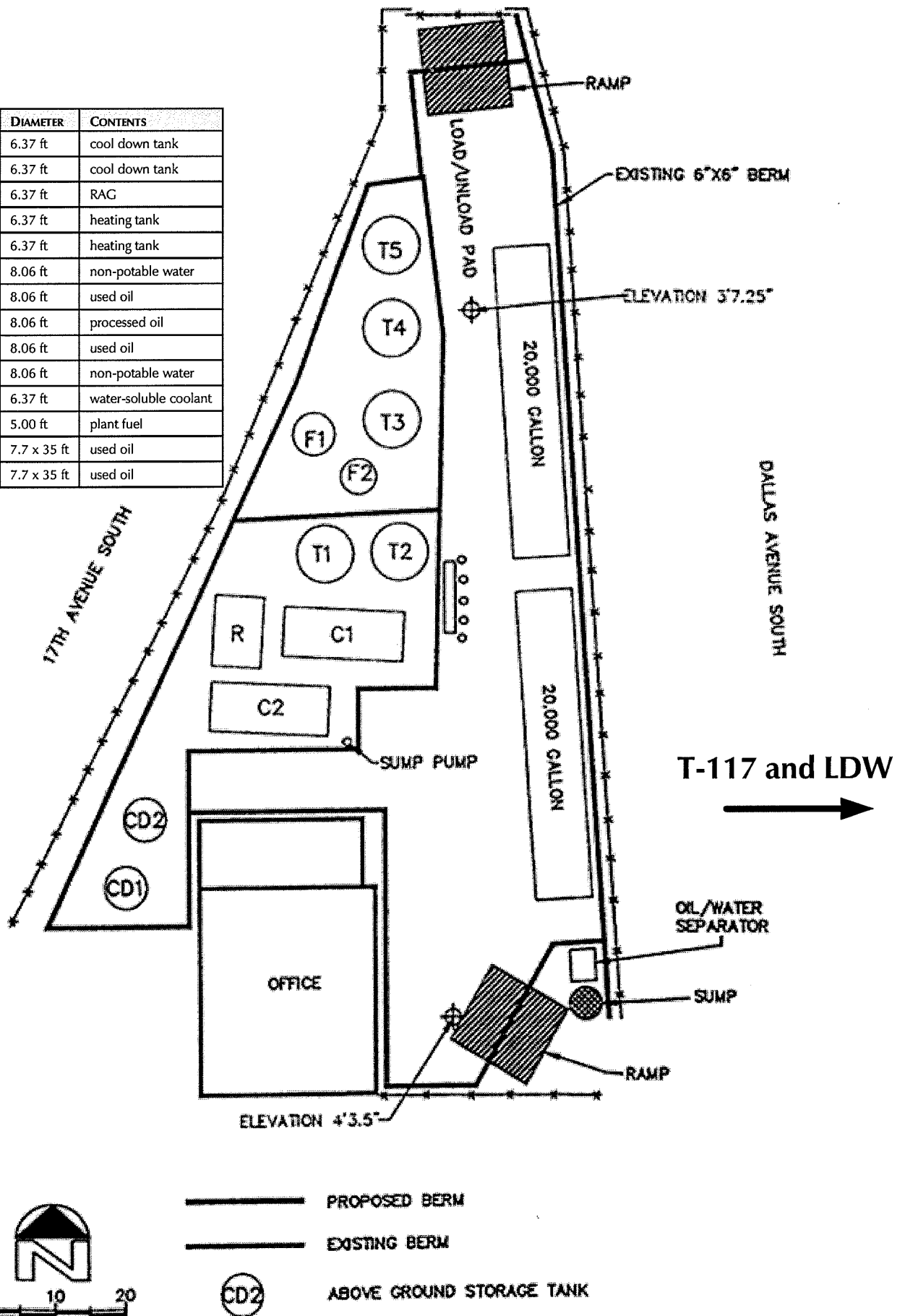


Figure 5-6. Plan of Basin Oil Plant, 1996 (Basin Oil 1995)

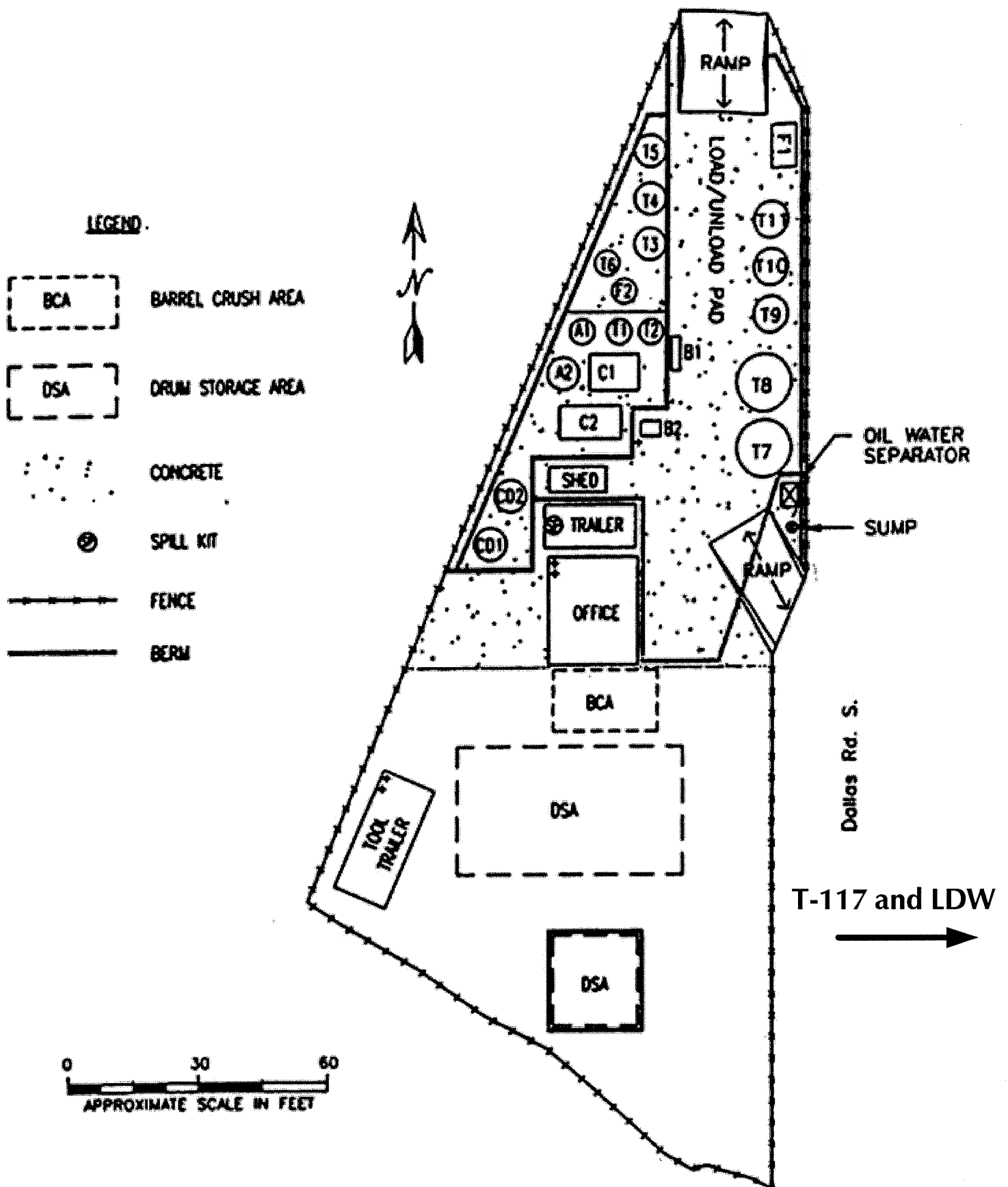


Figure 5-7. Plan of Basin Oil Plant, 2000 (EMR 2000)

T-117 Summary of Existing Information

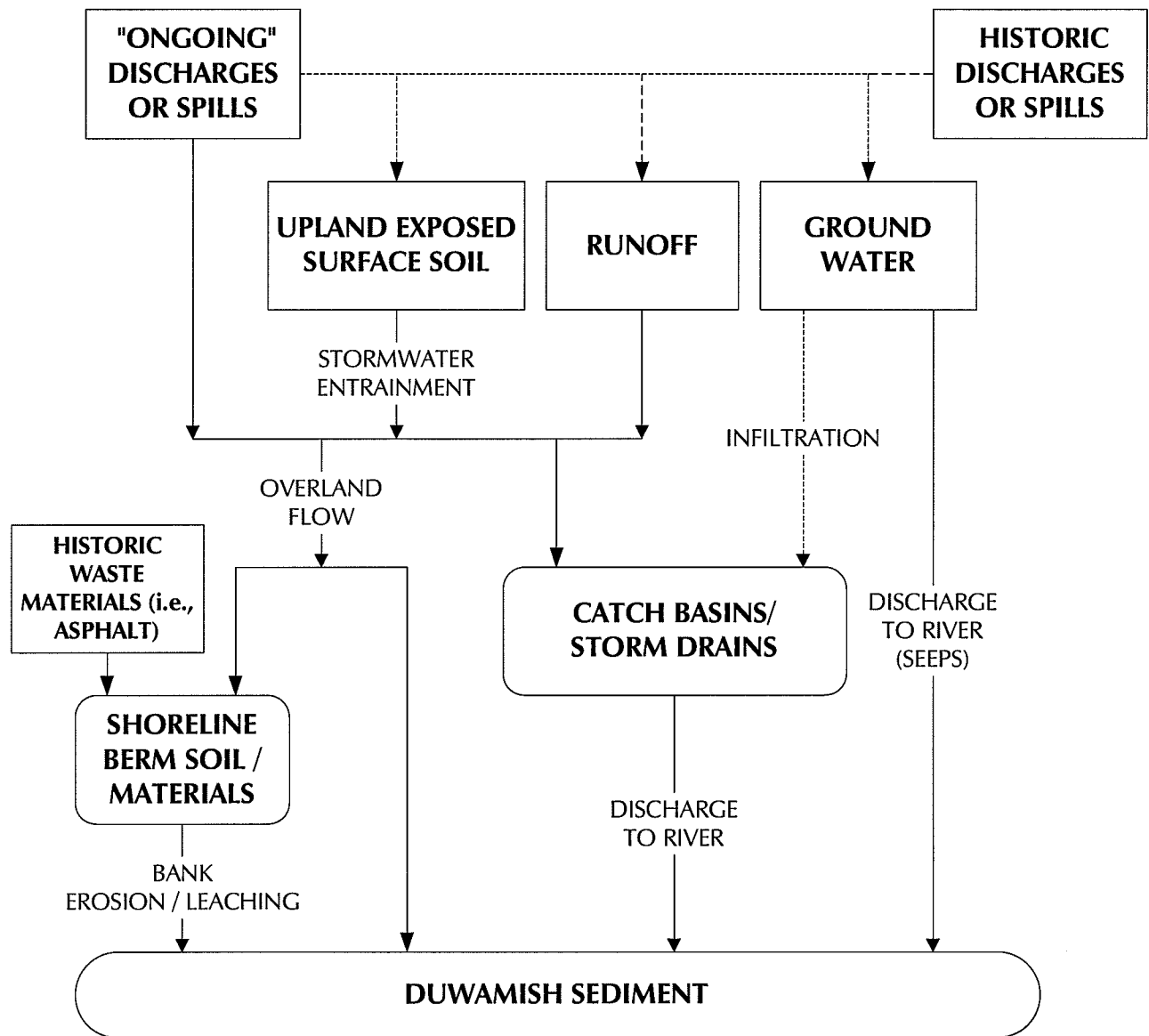


Figure 5-8. Conceptual site model: potential transport processes for contaminants from upland sources to Duwamish sediment

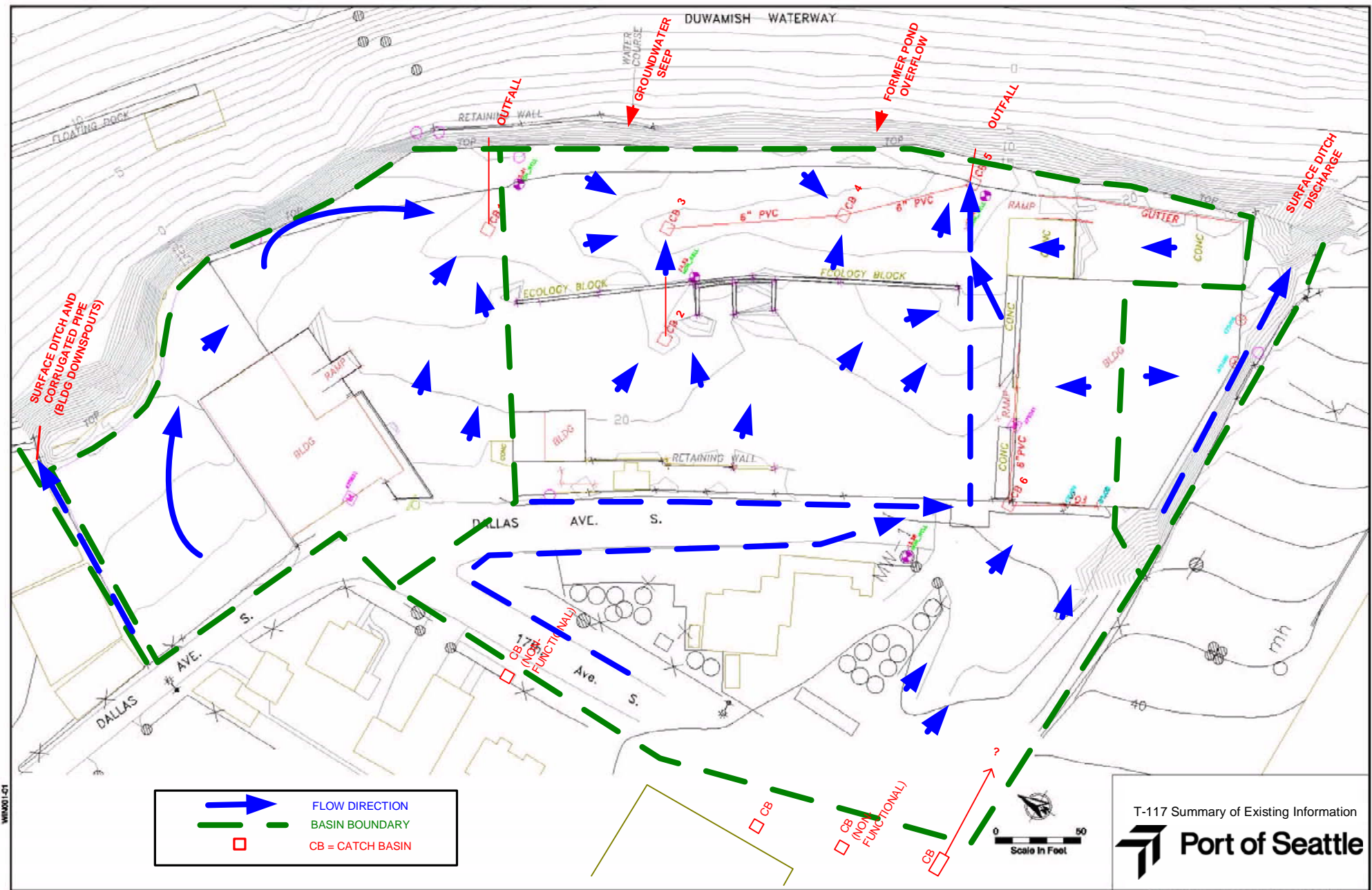


Figure 5-9. Site drainage map

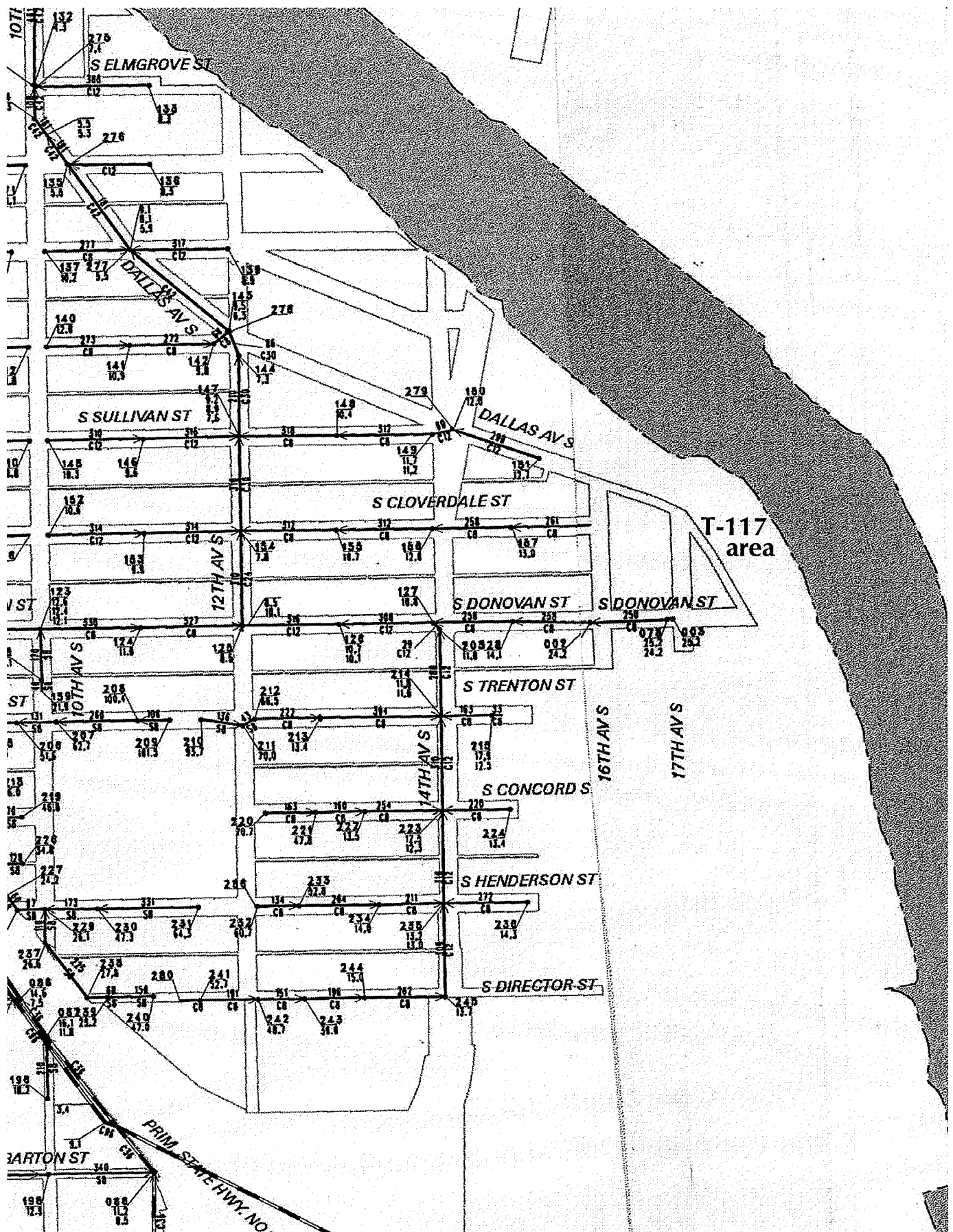
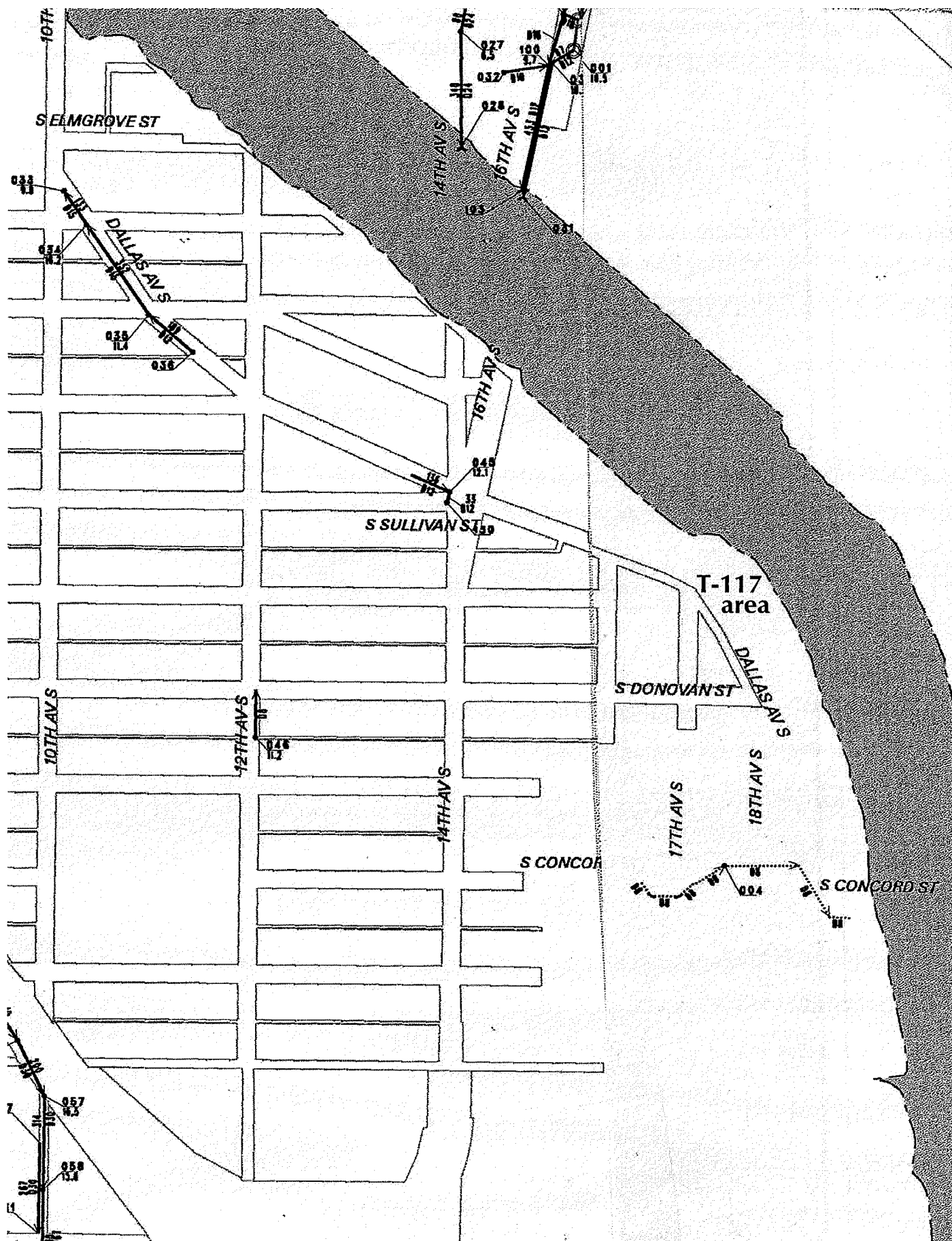






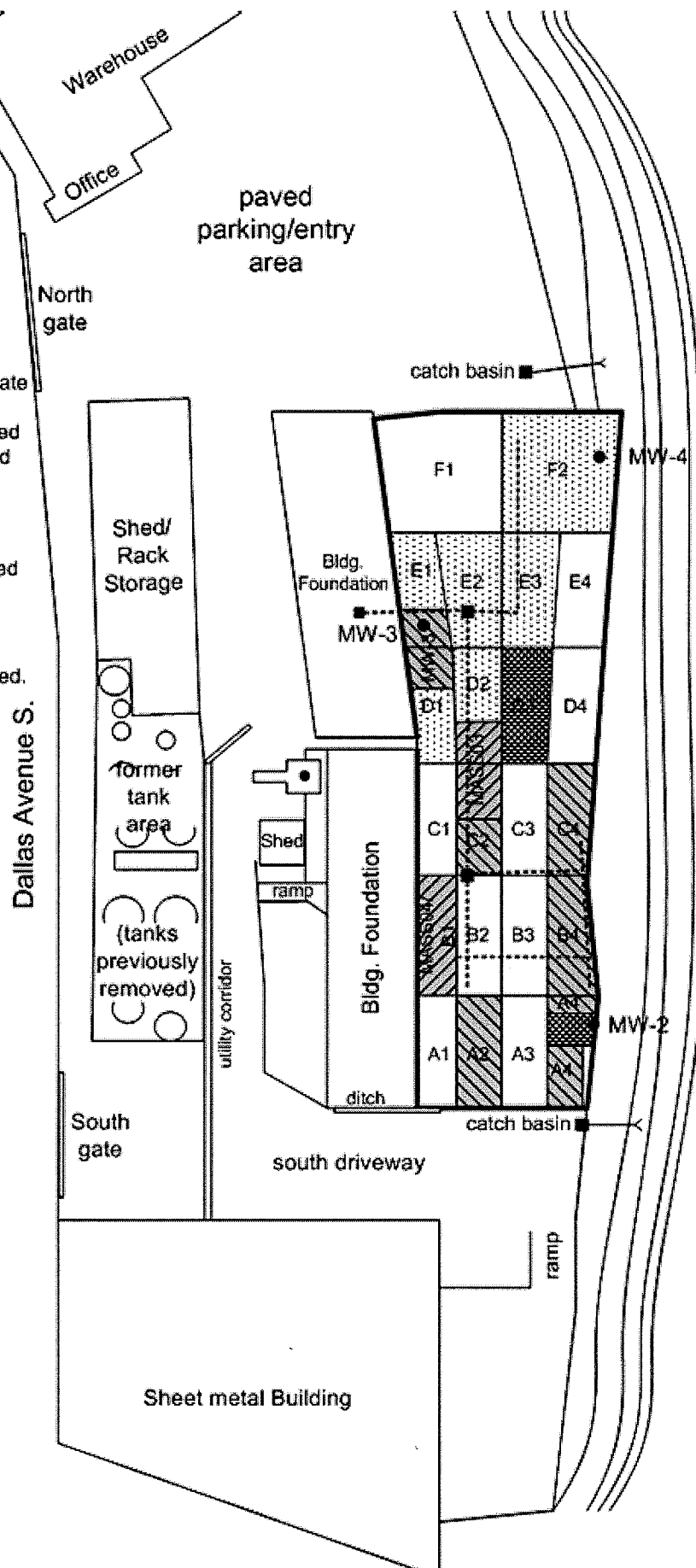
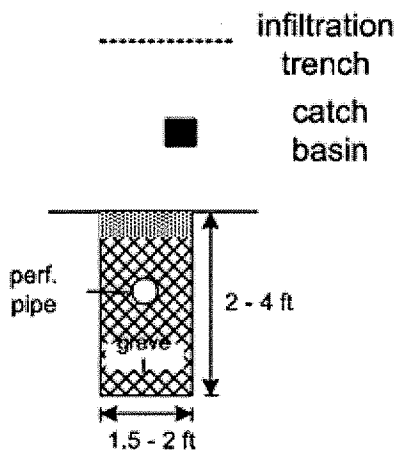
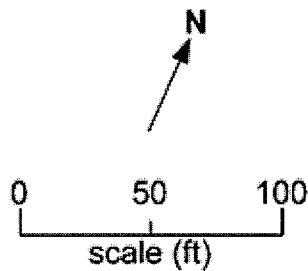


Figure 5-10. City of Seattle sewerage mapping

T-117 Summary of Existing Information



-  Surface scrape only (0.5 ft)
-  Excavate to 2.5 ft
-  Excavate to 4.0 ft
-  MASS03 and MASS04: Excavate to 4.0 ft. - verification testing. Additional excavation as needed or until moisture is encountered
-  D-3: Excavate to 5.5 ft - verification testing. Additional excavation as needed or until excessive moisture encountered
-  MW-2: Excavate to 5.0 ft. - verification testing. Additional excavation as needed or until excessive moisture encountered.



DUWAMISH WATERWAY NO. 1

Figure 5-12. Infiltration trench system in roadway near T-117

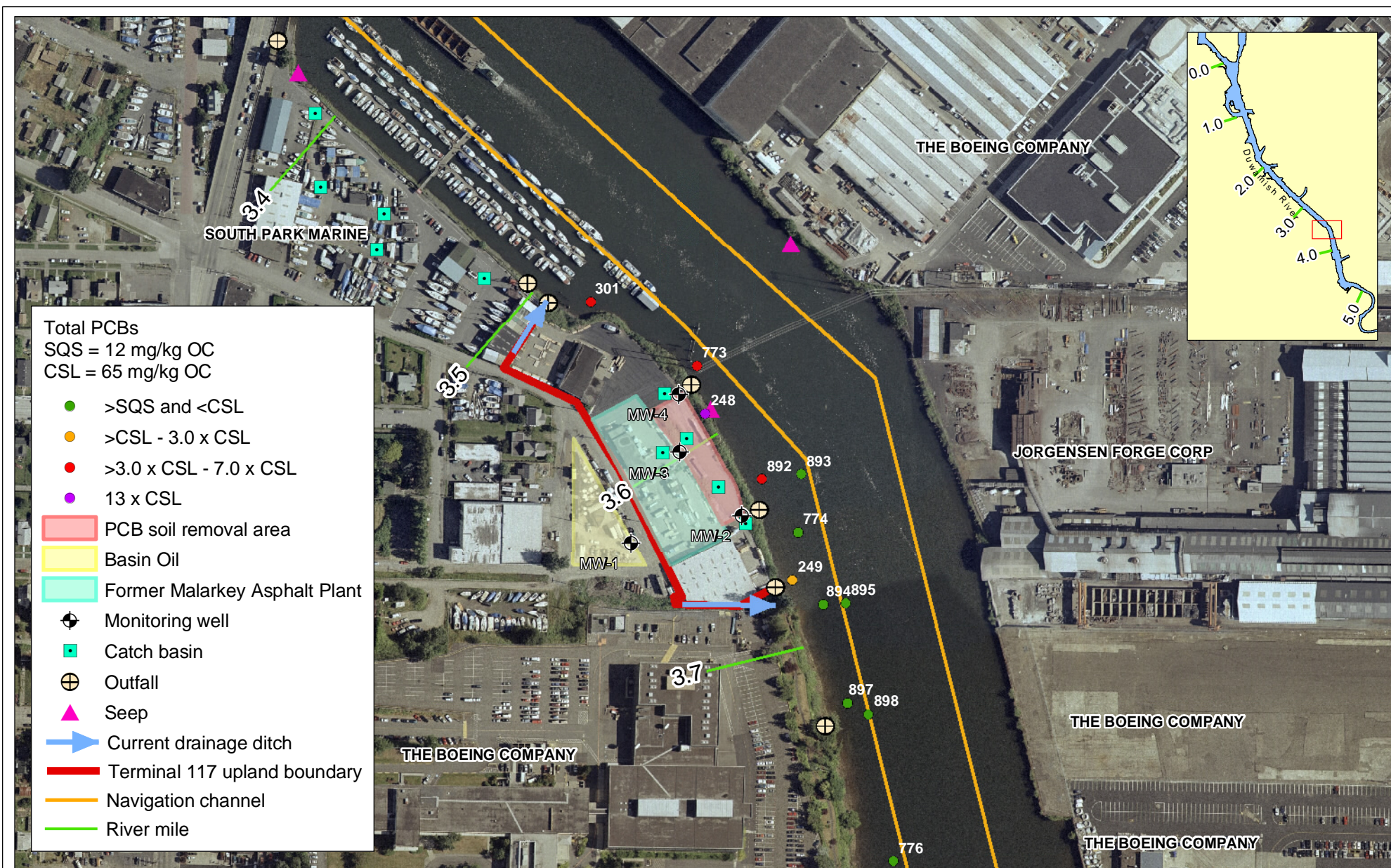


Figure 6-1. Summary of selected environmental information for Terminal 117 and South Park Marina

Orthophoto source: King County 1999. Outfall locations are approximations from recent field surveys and will be updated when the most recent City of Seattle outfall data become available.

Early Action remediation boundary to be determined based on the results of this investigation



WindWard
 environmental LLC

Prepared by RAC 08/27/03 Map 982

W:\Projects\03-08-12 T-117 (Malarkey)\Data\GIS